

TENT COOPERATION TREA

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 02 March 1999 (02.03.99)	Applicant's or agent's file reference 08366/018W01
International application No. PCT/US98/14667	Priority date (day/month/year) 15 July 1997 (15.07.97)
International filing date (day/month/year) 15 July 1998 (15.07.98)	Applicant ZUKER, Charles, S. et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

11 February 1999 (11.02.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Maria Victoria CORTIELLO
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 02 DEC 1999

WIPO PCT

Applicant's or agent's file reference 08366/018WO1		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US98/14667	International filing date (day/month/year) 15 JULY 1998	Priority date (day/month/year) 15 JULY 1997	
International Patent Classification (IPC) or national classification and IPC IPC(6): C12N 5/00, 15/00; C12Q 1/02 and US Cl.: 800/3, 13; 435/29, 325, 348			
Applicant THE REGENTS OF THE UNIVERSITY OF CALIFORNIA			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets.
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 11 FEBRUARY 1999	Date of completion of this report 08 NOVEMBER 1999
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer BRUCE CAMPBELL
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0196

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US98/14667

I. Basis of the report

1. This report has been drawn on the basis of *(Substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments)*:

- ☒ the international application as originally filed.
- ☒ the description, pages 1-74 , as originally filed.
pages NONE , filed with the demand.
pages NONE , filed with the letter of _____
pages _____ , filed with the letter of _____
- ☒ the claims, Nos. 1-40 , as originally filed.
Nos. NONE , as amended under Article 19.
Nos. NONE , filed with the demand.
Nos. NONE , filed with the letter of _____
Nos. _____ , filed with the letter of _____
- ☒ the drawings, sheets/fig NONE , as originally filed.
sheets/fig NONE , filed with the demand.
sheets/fig NONE , filed with the letter of _____
sheets/fig _____ , filed with the letter of _____

2. The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box Additional observations below (Rule 70.2(c)).

4. Additional observations, if necessary:

NONE

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. STATEMENT**

Novelty (N)	Claims <u>1-40</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-40</u>	NO
Industrial Applicability (IA)	Claims <u>1-40</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-40 lack an inventive step under PCT Article 33(3) as being obvious over Huber et al. taken with Chevesich et al. and Saras et al. Huber et al. teach that the inaD protein associates with the Trp protein and other proteins to form a signalling complex. Chevesich et al. teach that a mutation in a PDZ domain of the inaD protein prevents Trp from properly associating with the other elements of the complex, resulting in loss of correct signal transduction. The special technical feature of the claimed invention is mutation of a protein of a signalling complex to prevent association of another protein and hence inhibit signal transduction. It is not clear whether the mutant used by Chevesich et al. is "naturally occurring," but in any event it would have been obvious to the skilled artisan that other mutations in the inaD gene could be made which would have a similar effect. It also would have been obvious to extend the findings of Chevesich et al. to other signalling complexes, since it was recognized in the art that PDZ domain-containing proteins are components of many membrane-associated signalling complexes, as taught by Saras et al.

Claims 1-40 meet the criteria set out in PCT Article 33(2) and 33(4).

_____ NEW CITATIONS _____

NONE

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The description is objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 5 because it fails to adequately enable practice of the claimed invention because:

The disclosure does not describe how to make or use a fly of any species other than *Drosophila*. The disclosure does not teach how to make or use mutants of any protein other than *inaD*. The disclosure does not teach how to make or use the chimeric proteins of claims 11-13. No chemical agent as claimed in claims 35 and 36 is disclosed. No therapeutic compound, treatment or modulating chemical as recited in claims 37-40 is disclosed.

Claims 1-40 are objected to as lacking clarity under PCT Rule 66.2(a)(v) because practice of the claimed invention is not enabled as required under PCT Rule 5.1(a) for the reasons set forth in the immediately preceding paragraph.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/14667

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C12N 5/00, 15/00; C12Q 1/02

US CL : 800/3, 13; 435/29, 325, 348

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 800/3, 13; 435/29, 325, 348

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, BIOSIS, EMBASE, MEDLINE, DERWENT BIOTECH, CAS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	TSUNODA et al. A multivalent PDZ-domain protein assembles signalling complexes in a G-protein-coupled cascade. Nature. 17 July 1997, Vol. 388, pages 243-249, see the entire document.	1-40 ✓
Y	HUBER et al. The transient receptor potential protein (Trp), a putative store-operated Ca ²⁺ channel essential for phosphoinositide-mediated photoreception, forms a signaling complex with NorpA, InaC and InaD. The EMBO Journal. 1996, Vol. 15, No. 24, pages 7036-7045, see the entire document.	1-40 ✓

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
B earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

21 OCTOBER 1998

Date of mailing of the international search report

02 NOV 1998

Name and mailing address of the ISA/US
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/14667

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SARAS et al. PDZ domains bind carboxy-terminal sequences of target proteins. Trends in Biochemical Sciences. 1996, Vol. 21, No. 12, pages 455-458, see the entire document.	1-40 ✓
P, Y	SHIEH et al. Association of INAD with NORPA is essential for controlled activation and deactivation of Drosophila phototransduction in vivo. Proceedings of the National Academy of Science USA. November 1997, Vol. 94, pages 12682-12687, see the entire document.	1-40 ✓
Y	CHEVESICH et al. Requirement for the PDZ Domain Protein, INAD, for Localization of the TRP Store-Operated Channel to a Signaling Complex. Neuron. January 1997, Vol. 18, pages 95-105, see the entire document.	1-40 ✓